



ENVIRONMENTAL HAZARD AND VULNERABLE ANALYSIS IN KARBI ANGLONG DISTRICT

Rebecca Kramsapi

Research Scholar, Dept. of Geography, North Eastern Hill University, Shillong.

ABSTRACT

: Environmental hazard is a potentially damaging physical event, phenomenon or human activity that may cause the loss of life or property, social and economic disruption or environmental degradation (UNO). It is apparent from the above UN definition that hazards are physical events i.e. causes or processes of disasters whether natural or man-induced. North east India falls in earthquake zone area, face numerous hazard, be it natural or manmade hazard. Every year thousands of people lost their life and property. In the state of Assam, flood is the most often occurring phenomena, flooded by the mighty Brahmaputra and its tributaries, surrounded by the hills on all side. Thunderstorm and cyclone also have great effect in the area. From the past one year, cyclone has been the distraous in the hilly district of Karbi Anglong, Assam. Lots of houses, property and many injured have been reported from the affected area. This paper tries to understand and analyze the environmental hazard and vulnerability in Karbi Anglong district of Assam. Data is based on both primary and secondary data collected from different sources.

KEYWORDS: environment; hazard; disasters; flood; cyclone.

I. INTRODUCTION:

Environmental hazards may be defined as those extremes events either natural or man induced which occur rarely and exceed the tolerable magnitude within or beyond certain time limits, make human adjustment very difficult, results in colossal losses of property, human and animal lives, destruction of settlement and vegetations etc. environmental hazards are normally divided into the basis of main causative factors and their mode of origin

1. Natural Hazard: Hazards with Meteorological, geological or even biological origin.
2. Man induced hazards (anthropogenic): Hazards with Human Caused or Technological origin.

Vulnerable denotes the 'conditions determined by physical, social, economic and environmental factors or processes, which increase susceptibility of a community to the impacts of hazards. Vulnerability is far from being a static process; it is a dynamic process that keeps on changing the probability of process of loss and damage of all the elements exposed to disaster.

It is also important to know that Natural Phenomena are extreme Climatologically, Hydrological or Geological processes that do not pose any threat to human or property. For example, a massive earthquake in an unpopulated area is a natural phenomena but not a hazard. It is when these natural phenomena interact with human population or fragile areas which cases wide spread damage. The populations which are prone to these natural phenomena are called Vulnerable to hazards.

A disaster is the output of a hazard such as earthquake, flood, landslide or cyclone coinciding with a vulnerable situation, which may include communities, cities or villages. Without vulnerability or hazard there is no disaster. A disaster happens when vulnerability and hazard meet.

India is a vast country and is prone to many hazards. In the meantime India has experienced the disaster like tsunami in 2008, great earthquakes like Assam-1950, Gujarat- 1992, Sikkim-2011, Super cyclones of Orissa, unexpected flash flood of Mumbai etc. Considering such situation Government of India already has passed the Disaster Management Act on 23rd December, 2005 in the Parliament. After this Act, disaster is no more confined to any particular department rather it is confined to all departments. This act enables the state government to form disaster management authority at the state level and make it more effective and specific.

II. OBJECTIVES:

The study is based on two objectives

1. To identify the environmental hazard in the study area;
2. To analyze the vulnerability of environmental hazard;

III. METHODOLOGY:

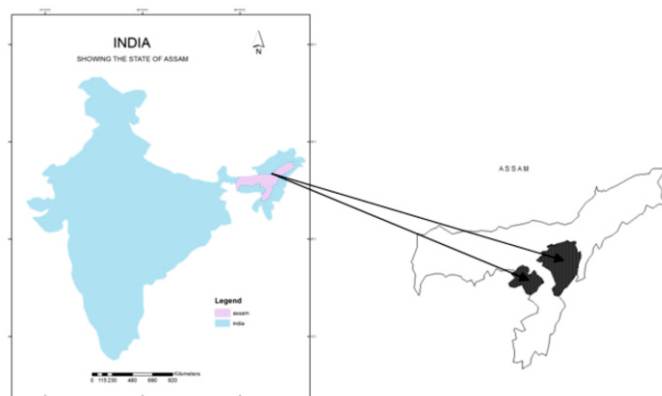
The paper primarily based on interviews with the local affected people. The secondary data are collected from books, journal, official records and government

offices like DDMA, Karbi Anglong.

IV. LOCATION AND BOUNDARY:

Karbi Anglong is one of the two hills district in Assam. The unit Mikir and North Cachar Hills was formally created on 17th November 1951 with some part of the district of Sibsagar (Now Golaghat), Nagaon, Cachar and United Khasi and Jaintia Hills district and present Meghalaya for all round development of the tribal folk of central Assam. This was followed by bifurcation of the erstwhile district of United Mikir and North Cachar Hills district into two separate district under the banner of Mikir Hills and North Cachar Hills district in the year 1970. The Mikir Hills district was again rechristened as 'Karbi Anglong' district w.e.f. 14th October 1976. Thus Karbi Anglong came into being a fully fledged separate district in the map of Assam with its head-quarter at Diphu. The district enjoys autonomy under the provision of Sixth schedule of the Indian constitution.

Karbi Anglong is the biggest district in Assam and is situated in the central part of Assam between latitude 25°33' and longitude 92°10' and 93°50' East and altitude varies from 300 MSL in north and 1600 MSL in east and 75-150 MSL in valleys. The district shares its border with Golaghat district in the east, Meghalaya and Mizoram in the west, Nagaon and Golaghat district in the North and N.C. Hills in the south.



V. HAZARD AND VULNERABILITY ANALYSIS:

This chapter largely deals with the disasters that Karbi Anglong has experienced. Based on this, the vulnerability assessment of people and their income sources, infrastructure, crops, livestock resources, drinking water supply, daily necessities, communication and transportation system, public distribution, medical facilities and other elements has been done so that such elements can be safely shifted to, or to be taken care of before any unexpected disaster or during the disasters. This is the most important part of the plan. Vulnerability assessment deals with the socio-economic vulnerability, housing vulnerability and environmental vulnerability

Table 1: Environmental Hazard in Karbi Anglong District of Assam

Type of event	2004	2005	2006	2007	2008	2009	2010	2011
Flood	Yes						yes	yes
Drought						yes		
Earthquake								
Major epidemics								
Man-made disaster	yes	yes		yes	yes			
Others					yes			

Source: district disaster management

V. (A) NATURAL HAZARD:

Flood: A severe flood occurred in the month of June-July 2004 in the district adjacent to Nagaon district affecting 12,931 hectares of land and 65,956 number of population, 1 person died by drowning and rail road communication was disrupted. Similar flood occurred in the year 2010 2011 in the district which lead to lots of property as well as destroyed paddy fields. In the year 2009 drought was reported in the entire district falling of the monsoon rain causing huge damage to crops. Floods has been a regular and common hazard of Assam, in this case Karbi Anglong district is no exception, every year hundreds of houses, properties, crop field are destroyed and damage by the flood. The causes of flood in the district are mainly due to the following reasons:

1. High intensity of rainfall over a short monsoon season which causes heavy discharge in the downstream causing flood;
2. Deforestation in the catchment areas led lead to heavy soil erosion leading to deposition in the lower stream;
3. Less vegetative cover on the bank of river causing loose soil, weak embankment etc

(B) Earthquake: Karbi Anglong has not experienced any major earthquake yet except few mild tremors occasionally. But the entire district is very much vulnerable to earthquake due to its weak geography and fragile geomorphology being in the most dangerous Seismic Zone i.e. Zone (V). The difficult terrain and arduous communication has made it hazardous to earthquake. The whole district is sitting on the bed of limestone and hence very fragile. The soil is very much unstable here and hence needs special attention to structures and constructions. It is to mention here that about 98% of P.W.D. buildings are Assam Type and only 2% are RCC buildings in the district.

(C) Landslide: Though the district has no past history of landslide it is vulnerable to landslide due to its weak soil structures. Road erosion and road dumping is a common phenomenon in the district and normal life is distorted due to communication. Further many road accidents takes place due to the road dumping cases

(D) Drought: Drought was once experienced by the district in the year 2009 and the farmers had to bear heavy loss. The production was very low and the district administration had to distribute relief material and seed to the affected population. The whole district is vulnerable to draught and as no such natural water reservoir is there in the district from where the water can be irrigated. Again the irrigation system is also very poor in the district and only 13,461 Ha of total crop field is connected with irrigation facilities

(E) Cyclone: Being a hilly place the district is vulnerable to seasonal cyclone between the months March-May. The entire district may face destruction due to cyclone like uprooting of trees, devastation of houses, communication distortion, damage to the paddy fields etc. the cyclone which occurred in January 2016 in the Dolamara Malasi of East Karbi Anglong district area has devastated the whole 7 villages destroying properties, houses, trees like bamboos, paddy field were completely destroyed effecting 300 houses, leaving them homeless.

VI. ANTHROPOGENIC OR MANMADE DISASTER:

In the year 2005, several people were killed in civilian and militants violence. Such major incident was on the 17.10.2005, where ultras killed 40 people including an infant with sharp weapons at sarsim and preseck village under Kheroni PS due to the ethnic conflict. A series of Bomb blast occurred at Diphu Town, Howraghat town killing 5 people on, injuring 110 people. Others: Oil pilferage on 20.09.2008 at Rongapahar siding killing 8 persons with burn injuries and injuring many.

Other Manmade disasters: The district has already experienced a series of ethnic clashes, riots, terrorist attack, bomb blast in the past with heavy loss of life and property. Again the district shares boundaries with Meghalaya and Nagaland state which increases the vulnerability of the border areas. There are 10 nos of border out post in the district to look after the situation and more focus is needed to tackle any unwanted situation.

Elephant Depression: Due to deforestation in the areas like Chowkiholder, Deithor, Katkhathi, Lahorijan elephant come down in search of food and shelter and create havoc among the human habitation of these areas. Around 100 Sq. Km area is affected by Elephant Depression in this area. The forest department (East Division), Diphu has made arrangement for patrolling party in these areas for monitoring elephant movement.

VULNERABILITY ANALYSIS:

The district receives heavy rainfall during the monsoon and as a result the rivers get inundated and the nearby areas experiences flash flood due to rain in the nearby hills. The major rivers in the district which causing flood are

1. Jamuna, Dighalpani, Dikharu, Horgathi, Harina and Diphu rivers under Diphu sub-division.
2. Kopili and Borapani rivers under Hamren sub-division.
3. Dhansiri river under Bokajan sub-division

Table.2: Flood affected farm families

Sub-division	Flood affected farm areas	Flood affected crop areas
Diphu	5840	4642
Hamren	4922	4120
Bokajan	1696	1835
Total Of Karbi Anglong	12458	10597

Source: district disaster management

Table.3: Flood affected hospital area

Flood affected hospital area	Villages/river
Dhansiri PHC	Dhansiri river
Howraghat PHC	Jamuna, Dikharu and Korkanthi river
Bokajan PHC	Dhansiri river
Baithalangso PHC	Kopili and Borapani
Donkamukam PHC	Kopili river

Source: district disaster management

Flood affected crop areas:

Under Diphu Sub Division: 4642 Ha

Under Hamren Sub Division: 4120 Ha

Under Bokajan Sub Division: 1835 Ha

Total of Karbi Anglong: 10,597 Ha

Flood affected Police Station area:

Flood affected Hospital area:

1. Under Dhansiri PHC: Villages along the bank of Dhansiri River,
2. Under Howraghat CHC: Villages along the bank of Jamuna, Dikharu and Korkanthi River.
3. Under Bokajan CHC: Villages along the bank of Dhansiri River.
4. Under Baithalangso PHC: Villages along the bank of Kopili and Borapani River.
5. Under Donkamokam CHC: Villages along the bank of the Kopili River.

According to vulnerability the Howraghat PS area Dokmoka PS area, Baithalangso PS area and Kheroni PS area is highly prone to flood.

Affected Forest area:

Under East Division, Diphu:

The area Silimkhowa, Jokhalabandha, Gagori, Kuthori, Kohora is affected by flood inundating around 80 sq. Km of area. The animals from Kaziranga National park are affected by flood and they come across the human habitation causing harm to the human population. Many animals also die in flood and by human attack. Elephant depression in human habitat area during flood is a common phenomenon in this area.

Rail-Road Accidents: National Highway 36 and 37 covers the district and the district is connected from headquarter Diphu to the Golaghat District, Dimapur, Lumding, Guwahati, Nagaon, Jorhat, and Tezpur. Due to the weak soil structure the roads in the district gets easily eroded or dumping occurs.

CONCLUSION:

Both natural and man-made disaster causes a significant environmental damage threatening mankind. In the last few decades, a number of researches from different fields were conducted to minimize the loss. Due to flood, vast area of paddy field gets destroyed and thousands of people have to go homeless and landless. The poor person who is devastated by the recent cyclone has to start building their homes, start their life in their new homes. In order to deal with this the government should adopt strict measures. No doubt there is always an authority like district disaster management authority, but it does not reach to the interior part where is most affected. The concerned authority should keep awareness program, how to cope up with the natural calamities. The government should also be able to send a proper warning when there is a sign of such hazards.

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